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D1  
cont.

second end being associated with the only one free portion of the flexible flap so as to be lifted away from the seal surface during an exhalation, the second end also being located below the first end when the filtering face mask is worn on a person, wherein the flexible flap would normally assume a flat configuration when not secured to the valve seat and having no forces are applied to it, but the flexible flap when secured to the valve seat at its fixed portion has a curved profile when viewed from a side elevation and is pressed towards the seal surface in an abutting relationship therewith when a fluid is not passing through the orifice.

Kindly add claims 67-80 to this application.

5/24/02 66

67. A filtering face mask that comprises:

(a) a mask body that is adapted to fit over the nose and mouth of a wearer; and

(b) an exhalation valve that is positioned on the mask body substantially opposite to a wearer's mouth, the exhalation valve comprising:

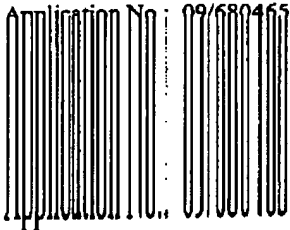
(1) a valve seat that comprises:

(i) a seal surface; and

(ii) an orifice that is surrounded by the seal surface when viewing the valve seat from the front;

D2

(2) a single flexible flap that is secured to the valve seat and that has a non-centrally disposed stationary portion and only one free portion and a peripheral edge that includes a stationary segment and a free segment, the stationary segment of the peripheral edge being associated with the non-central stationary portion of the flap so as to remain at rest during an exhalation, and the free segment being associated with the only one free portion of the flexible flap so as to be lifted away from the seal surface during an exhalation, the only one free portion also being located below the non-central stationary portion when the filtering face mask is worn on a person, wherein the flexible flap would normally assume a flat configuration when not secured to the valve seat and having no forces applied to it but when secured to the valve seat and viewed without a fluid passing



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through the orifice, the single flexible flap (i) has a curved profile when viewed from a side elevation in its secured position on the valve seat and (ii) is pressed towards the seal surface in an abutting relationship therewith.

D2 cont  
67. The filtering face mask of claim 67, wherein the seal surface is substantially uniformly smooth to insure that a good seal occurs between the single flexible flap and the seal surface, and wherein the flexible flap is made from a material that is capable of allowing the flap to display a bias towards the seal surface.

68. The filtering face mask of claim 67, wherein the flexible flap is elastomeric and is resistant to permanent set and creep.

69. The filtering face mask of claim 67, wherein the flexible flap is made from an elastomeric rubber that has a stress relaxation sufficient to keep the flexible flap in an abutting relationship to the seal surface under any static orientation for 24 hours at 70 °C, and wherein the flexible flap provides a leak-free seal according to the standards set forth in 30 C.F.R. § 11.183-2, July 1, 1991.

70. The filtering face mask of claim 70, wherein the flexible flap is made from a crosslinked polyisoprene.

71. The filtering face mask of claim 67, wherein the flexible flap has a Shore A hardness of about 30 to 50, and has a generally uniform thickness of about 0.3 to 0.6 millimeters.

72. The filtering face mask of claim 67, wherein the one free portion of the flexible flap has a profile that comprises a curve when viewed from the front, which curve is cut to correspond to the general shape of the seal surface, and wherein the flexible flap is 1.2 to 3 centimeters wide and is about 1 to 4 centimeters long.

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*33*  
34. The filtering face mask of claim 67, wherein the fixed portion of the flexible flap is about 10 to 25 percent of the total circumferential edge of the flexible flap, with the remaining 75 to 90 percent being free to be lifted from the seal surface.

*24*  
75. The filtering face mask of claim 67, wherein the flexible flap is positioned on the valve such that exhaled air is deflected downward during an exhalation when the filtering face mask is worn on a person.

*D2 cont*  
*75*  
76. The filtering face mask of claim 67, wherein the mask body is cup-shaped and comprises at least one layer for providing structure to the mask and a filtration layer, the at least one structure-providing layer being located outside of the filtration layer.

*76*  
*77*  
77. The filtering face mask of claim 67, wherein at least 60 percent of the total airflow flows through the exhalation valve under a normal exhalation test.

*77*  
78. The filtering face mask of claim 67, wherein at least 73 percent of the total airflow flows through the exhalation valve under a normal exhalation test.

*78*  
79. The filtering face mask of claim 67, wherein the exhalation valve is positioned on the mask body substantially opposite to a wearer's mouth, and wherein the flexible flap is mounted to the valve seat in cantilever fashion.

*29*  
80. The filtering face mask of claim 67, wherein the shape of the orifice does not wholly correspond to the shape of the seal surface.